

II. AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions and listings of claims in the application. The text of all claims under examination is submitted, and the status of each is identified.

Listing of Claims

1-521. (Cancelled)

522. (New) A system for forming a mono diameter wellbore casing within a borehole that includes a preexisting wellbore casing, comprising:

- means for supporting the expandable tubular member, an hydraulic actuator, and an adjustable expansion device within the borehole;
- means for increasing the size of the adjustable expansion device;
- means for displacing the adjustable expansion device upwardly relative to the expandable tubular member using the hydraulic actuator to radially expand and plastically deform a portion of the expandable tubular member; and
- means for displacing the adjustable expansion device upwardly relative to the expandable tubular member to radially expand and plastically deform the remaining portion of the expandable tubular member and a portion of the preexisting wellbore casing that overlaps with an end of the remaining portion of the expandable tubular member.

523. (New) The system of claim 522, further comprising:

- means for reducing the size of the adjustable expansion device after the portion of the expandable tubular member has been radially expanded and plastically deformed.

524. (New) The system of claim 523, further comprising:

- means for fluidicly sealing the radially expanded and plastically deformed end of the expandable tubular member after reducing the size of the adjustable expansion device.

525. (New) The system of claim 524, further comprising:
means for permitting the position of the expandable tubular member to float relative to the position of the hydraulic actuator after fluidically sealing the radially expanded and plastically deformed end of the expandable tubular member.
526. (New) The system of claim 525, further comprising:
means for injecting a hardenable fluidic sealing material into an annulus between the expandable tubular member and the borehole after permitting the position of the expandable tubular member to float relative to the position of the hydraulic actuator.
527. (New) The system of claim 525, further comprising:
means for increasing the size of the adjustable expansion device after permitting the position of the expandable tubular member to float relative to the position of the hydraulic actuator.
528. (New) The system of claim 527, further comprising:
means for displacing the adjustable expansion cone upwardly relative to the expandable tubular member to radially expand and plastically deform the remaining portion of the expandable tubular member.
529. (New) The system of claim 528, further comprising:
means for not permitting the position of the expandable tubular member to float relative to the position of the hydraulic actuator; and
means for displacing the adjustable expansion cone upwardly relative to the expandable tubular member using the hydraulic actuator to radially expand and plastically deform the end of the remaining portion of the expandable tubular member that overlaps with the preexisting wellbore casing after not permitting the position of the expandable tubular member to float relative to the position of the hydraulic actuator.
530. (New) A system for radially expanding and plastically deforming a tubular member, comprising:
means for positioning the tubular member within a preexisting structure;

means for radially expanding and plastically deforming a lower portion of the tubular member to form a bell section; and

means for radially expanding and plastically deforming a portion of the tubular member above the bell section.

531. (New) The system of claim 530, wherein positioning the tubular member within a preexisting structure comprises:

means for locking the tubular member to an expansion device.

532. (New) The system of claim 531, wherein the outside diameter of the expansion device is less than the inside diameter of the tubular member.

533. (New) The system of claim 531, wherein the expansion device is positioned within the tubular member.

534. (New) The system of claim 531, wherein the expansion device comprises an adjustable expansion device.

535. (New) The system of claim 534, wherein the adjustable expansion device is adjustable to a plurality of sizes.

536. (New) The system of claim 531, wherein the expansion device comprises a plurality of expansion devices.

537. (New) The system of claim 536, wherein at least one of the expansion devices comprises an adjustable expansion device.

538. (New) The system of claim 537, wherein at least one of the adjustable expansion device is adjustable to a plurality of sizes.

539. (New) The system of claim 530, wherein means for radially expanding and plastically deforming a lower portion of the tubular member to form a bell section comprises:

means for lowering an expansion device out of an end of the tubular member; and

means for pulling the expansion device through the end of the tubular member.

540. (New) The system of claim 539, wherein means for lowering an expansion device out of an end of the tubular member comprises:

means for lowering the expansion device out of the end of the tubular member; and
means for adjusting the size of the expansion device.

541. (New) The system of claim 540, wherein the adjustable expansion device is adjustable to a plurality of sizes.

542. (New) The system of claim 540, wherein the expansion device comprises a plurality of adjustable expansion devices.

543. (New) The system of claim 542, wherein at least one of the adjustable expansion devices is adjustable to a plurality of sizes.

544. (New) The system of claim 539, wherein means for pulling the expansion device through the end of the tubular member comprises:

means for gripping the tubular member; and
means for pulling an expansion device through an end of the tubular member.

545. (New) The system of claim 544, wherein means for gripping the tubular member comprises:

means for permitting axial displacement of the tubular member in a first direction; and
means for not permitting axial displacement of the tubular member in a second direction.

546. (New) The system of claim 544, wherein means for pulling the expansion device through the end of the tubular member comprises:

means for pulling the expansion device through the end of the tubular member using an actuator.

547. (New) The system of claim 530, wherein means for radially expanding and plastically deforming a portion of the tubular member above the bell section comprises:

means for lowering an expansion device out of an end of the tubular member; and
means for pulling the expansion device through the end of the tubular member.

548. (New) The system of claim 547, wherein means for lowering an expansion device out of an end of the tubular member comprises:

means for lowering the expansion device out of the end of the tubular member; and
means for adjusting the size of the expansion device.

549. (New) The system of claim 548, wherein the adjustable expansion device is adjustable to a plurality of sizes.

550. (New) The system of claim 548, wherein the expansion device comprises a plurality of adjustable expansion devices.

551. (New) The system of claim 550, wherein at least one of the adjustable expansion devices is adjustable to a plurality of sizes.

552. (New) The system of claim 547, wherein means for pulling the expansion device through the end of the tubular member comprises:

means for gripping the tubular member; and
means for pulling an expansion device through an end of the tubular member.

553. (New) The system of claim 552, wherein means for gripping the tubular member comprises:

means for permitting axial displacement of the tubular member in a first direction; and
means for not permitting axial displacement of the tubular member in a second direction.

554. (New) The system of claim 552, wherein means for pulling the expansion device through the end of the tubular member comprises:

means for pulling the expansion device through the end of the tubular member using an actuator.

555. (New) The system of claim 547, wherein means for pulling the expansion device through the end of the tubular member comprises:

means for pulling the expansion device through the end of the tubular member using fluid pressure.

556. (New) The system of claim 555, wherein means for pulling the expansion device through the end of the tubular member using fluid pressure comprises:

means for pressurizing an annulus within the tubular member above the expansion device.

557. (New) The system of claim 530, wherein means for radially expanding and plastically deforming a portion of the tubular member above the bell section comprises:

means for fluidically sealing an end of the tubular member; and

means for pulling the expansion device through the tubular member.

558. (New) The system of claim 557, wherein the expansion device is adjustable.

559. (New) The system of claim 558, wherein the expansion device is adjustable to a plurality of sizes.

560. (New) The system of claim 557, wherein the expansion device comprises a plurality of adjustable expansion devices.

561. (New) The system of claim 560, wherein at least one of the adjustable expansion devices is adjustable to a plurality of sizes.

562. (New) The system of claim 557, wherein means for pulling the expansion device through the end of the tubular member comprises:

means for gripping the tubular member; and

means for pulling an expansion device through an end of the tubular member.

563. (New) The system of claim 562, wherein means for gripping the tubular member comprises:

means for permitting axial displacement of the tubular member in a first direction; and

means for not permitting axial displacement of the tubular member in a second direction.

564. (New) The system of claim 563, wherein means for pulling the expansion device through the end of the tubular member comprises:

means for pulling the expansion device through the end of the tubular member using an actuator.

565. (New) The system of claim 557, wherein means for pulling the expansion device through the end of the tubular member comprises:

means for pulling the expansion device through the end of the tubular member using fluid pressure.

566. (New) The system of claim 565, wherein means for pulling the expansion device through the end of the tubular member using fluid pressure comprises:

means for pressurizing an annulus within the tubular member above the expansion device.

567. (New) The system of claim 530, wherein means for radially expanding and plastically deforming a portion of the tubular member above the bell section comprises:

means for overlapping the portion of the tubular member above the bell section with an end of a preexisting tubular member; and

means for pulling an expansion device through the overlapping portions of the tubular member and the preexisting tubular member.

568. (New) The system of claim 567, wherein the expansion device is adjustable.

569. (New) The system of claim 568, wherein the expansion device is adjustable to a plurality of sizes.

570. (New) The system of claim 567, wherein the expansion device comprises a plurality of adjustable expansion devices.

571. (New) The system of claim 570, wherein at least one of the adjustable expansion devices is adjustable to a plurality of sizes.

572. (New) The system of claim 567, wherein means for pulling the expansion device through the overlapping portions of the tubular member and the preexisting tubular member comprises:

means for gripping the tubular member; and

means for pulling the expansion device through the overlapping portions of the tubular member and the preexisting tubular member.

573. (New) The system of claim 572, wherein means for gripping the tubular member comprises:

means for permitting axial displacement of the tubular member in a first direction; and

means for not permitting axial displacement of the tubular member in a second direction.

574. (New) The system of claim 572, wherein means for pulling the expansion device through the overlapping portions of the tubular member and the preexisting tubular member comprises:

means for pulling the expansion device through the overlapping portions of the tubular member and the preexisting tubular member using an actuator.

575. (New) The system of claim 572, wherein means for pulling the expansion device through the overlapping portions of the tubular member and the preexisting tubular member comprises:

means for pulling the expansion device through the overlapping portions of the tubular member and the preexisting tubular member using fluid pressure.

576. (New) The system of claim 575, wherein means for pulling the expansion device through the overlapping portions of the tubular member and the preexisting tubular member using fluid pressure comprises:

means for pressurizing an annulus within the tubular member above the expansion device.

577. (New) The system of claim 572, further comprising:

means for cutting an end of the portion of the tubular member that overlaps with the preexisting tubular member.

578. (New) The system of claim 577, further comprising:

means for removing the cut off end of the expandable tubular member from the preexisting structure.

579. (New) The system of claim 530, further comprising:
means for injecting a hardenable fluidic sealing material into an annulus between the expandable tubular member and the preexisting structure.
580. (New) The system of claim 530, further comprising:
means for cutting off an end of the expandable tubular member.
581. (New) The system of claim 580, further comprising:
means for removing the cut off end of the expandable tubular member from the preexisting structure.
582. (New) A system for cutting a tubular member, comprising:
means for positioning a plurality of cutting elements within the tubular member; and
means for bringing the cutting elements into engagement with the tubular member.
583. (New) The system of claim 582, wherein the cutting elements comprise:
a first group of cutting elements; and
a second group of cutting elements;
wherein the first group of cutting elements are interleaved with the second group of cutting elements.
584. (New) The system of claim 582, wherein means for bringing the cutting elements into engagement with the tubular member comprises:
means for bringing the cutting elements into axial alignment.
585. (New) The system of claim 582, wherein means for bringing the cutting elements into engagement with the tubular member further comprises:
means for pivoting the cutting elements.
586. (New) The system of claim 582, wherein means for bringing the cutting elements into engagement with the tubular member further comprises:
means for translating the cutting elements.

587. (New) The system of claim 582, wherein means for bringing the cutting elements into engagement with the tubular member further comprises:
- means for pivoting the cutting elements; and
 - means for translating the cutting elements.
588. (New) The method of claim 582, wherein means for bringing the cutting elements into engagement with the tubular member comprises:
- means for rotating the cutting elements about a common axis.
589. (New) The system of claim 582, wherein means for bringing the cutting elements into engagement with the tubular member comprises:
- means for pivoting the cutting elements about corresponding axes;
 - means for translating the cutting elements; and
 - means for rotating the cutting elements about a common axis.
590. (New) The system of claim 582, further comprising:
- means for preventing the cutting elements from coming into engagement with the tubular member if the inside diameter of the tubular member is less than a predetermined value.
591. (New) The system of claim 590, wherein means for preventing the cutting elements from coming into engagement with the tubular member if the inside diameter of the tubular member is less than a predetermined value comprises:
- means for sensing the inside diameter of the tubular member.
592. (New) A system for gripping a tubular member, comprising:
- means for positioning a plurality of gripping elements within the tubular member; and
 - means for bringing the gripping elements into engagement with the tubular member.
593. (New) The system of claim 592, wherein means for bringing the gripping elements into engagement with the tubular member comprises:
- means for displacing the gripping elements in an axial direction; and
 - means for displacing the gripping elements in a radial direction.

594. (New) The system of claim 592, further comprising:
means for biasing the gripping elements against engagement with the tubular member.
595. (New) A system for injecting a hardenable fluidic sealing material into an annulus between a tubular member and a preexisting structure, comprising:
means for positioning the tubular member into the preexisting structure;
means for sealing off an end of the tubular member;
means for operating a valve within the end of the tubular member; and
means for injecting a hardenable fluidic sealing material through the valve into the annulus between the tubular member and the preexisting structure.
596. (New) An apparatus for radially expanding and plastically deforming an expandable tubular member, comprising:
a support member;
a cutting device for cutting the tubular member coupled to the support member;
a gripping device for gripping the tubular member coupled to the support member;
a sealing device for sealing an interface with the tubular member coupled to the support member;
a locking device for locking the position of the tubular member relative to the support member;
a first adjustable expansion device for radially expanding and plastically deforming the tubular member coupled to the support member;
a second adjustable expansion device for radially expanding and plastically deforming the tubular member coupled to the support member;
a packer coupled to the support member; and
an actuator for displacing one or more of the sealing assembly, first and second adjustable expansion devices, and packer relative to the support member.
597. (New) An apparatus for cutting a tubular member, comprising:
a support member; and
a plurality of movable cutting elements coupled to the support member.

598. (New) An actuator, comprising:
a tubular housing;
a tubular piston rod movably coupled to and at least partially positioned within the housing;
a plurality of annular piston chambers defined by the tubular housing and the tubular piston rod;
and
a plurality of tubular pistons coupled to the tubular piston rod, each tubular piston movably positioned within a corresponding annular piston chamber.
599. (New) A packer comprising:
a support member defining a passage;
a shoe comprising a float valve coupled to an end of the support member;
one or more compressible packer elements movably coupled to the support member;
and
a sliding sleeve valve movably positioned within the passage of the support member.
600. (New) A method of radially expanding and plastically deforming an expandable tubular member within a borehole having a preexisting wellbore casing, comprising:
positioning the tubular member within the borehole in overlapping relation to the wellbore casing;
radially expanding and plastically deforming a portion of the tubular member to form a bell section; and
radially expanding and plastically deforming a portion of the tubular member above the bell section comprising a portion of the tubular member that overlaps with the wellbore casing;
wherein the inside diameter of the bell section is greater than the inside diameter of the radially expanded and plastically deformed portion of the tubular member above the bell section.
601. (New) A method for forming a mono diameter wellbore casing, comprising:
positioning an adjustable expansion device within a first expandable tubular member;
supporting the first expandable tubular member and the adjustable expansion device within a borehole;
lowering the adjustable expansion device out of the first expandable tubular member;
increasing the outside dimension of the adjustable expansion device;

displacing the adjustable expansion device upwardly relative to the first expandable tubular member m times to radially expand and plastically deform m portions of the first expandable tubular member within the borehole;
positioning the adjustable expansion device within a second expandable tubular member;
supporting the second expandable tubular member and the adjustable expansion device within the borehole in overlapping relation to the first expandable tubular member;
lowering the adjustable expansion device out of the second expandable tubular member;
increasing the outside dimension of the adjustable expansion device; and
displacing the adjustable expansion device upwardly relative to the second expandable tubular member n times to radially expand and plastically deform n portions of the second expandable tubular member within the borehole.

602. (New) A method for radially expanding and plastically deforming an expandable tubular member within a borehole, comprising:

positioning an adjustable expansion device within the expandable tubular member;
supporting the expandable tubular member and the adjustable expansion device within the borehole;
lowering the adjustable expansion device out of the expandable tubular member;
increasing the outside dimension of the adjustable expansion device;
displacing the adjustable expansion mandrel upwardly relative to the expandable tubular member n times to radially expand and plastically deform n portions of the expandable tubular member within the borehole; and
pressurizing an interior region of the expandable tubular member above the adjustable expansion device during the radial expansion and plastic deformation of the expandable tubular member within the borehole.

603. (New) A method for forming a mono diameter wellbore casing, comprising:

positioning an adjustable expansion device within a first expandable tubular member;
supporting the first expandable tubular member and the adjustable expansion device within a borehole;
lowering the adjustable expansion device out of the first expandable tubular member;
increasing the outside dimension of the adjustable expansion device;

displacing the adjustable expansion device upwardly relative to the first expandable tubular member m times to radially expand and plastically deform m portions of the first expandable tubular member within the borehole;
pressurizing an interior region of the first expandable tubular member above the adjustable expansion device during the radial expansion and plastic deformation of the first expandable tubular member within the borehole;
positioning the adjustable expansion mandrel within a second expandable tubular member;
supporting the second expandable tubular member and the adjustable expansion mandrel within the borehole in overlapping relation to the first expandable tubular member;
lowering the adjustable expansion mandrel out of the second expandable tubular member;
increasing the outside dimension of the adjustable expansion mandrel;
displacing the adjustable expansion mandrel upwardly relative to the second expandable tubular member n times to radially expand and plastically deform n portions of the second expandable tubular member within the borehole; and
pressurizing an interior region of the second expandable tubular member above the adjustable expansion mandrel during the radial expansion and plastic deformation of the second expandable tubular member within the borehole.

604. (New) A method for radially expanding and plastically deforming an expandable tubular member within a borehole, comprising:

supporting the expandable tubular member, an hydraulic actuator, and an adjustable expansion device within the borehole;
increasing the size of the adjustable expansion device; and
displacing the adjustable expansion device upwardly relative to the expandable tubular member using the hydraulic actuator to radially expand and plastically deform a portion of the expandable tubular member.

605. (New) A method for forming a mono diameter wellbore casing within a borehole that includes a preexisting wellbore casing, comprising:

supporting the expandable tubular member, an hydraulic actuator, and an adjustable expansion device within the borehole;

increasing the size of the adjustable expansion device;
displacing the adjustable expansion device upwardly relative to the expandable tubular member using the hydraulic actuator to radially expand and plastically deform a portion of the expandable tubular member; and
displacing the adjustable expansion device upwardly relative to the expandable tubular member to radially expand and plastically deform the remaining portion of the expandable tubular member and a portion of the preexisting wellbore casing that overlaps with an end of the remaining portion of the expandable tubular member.

606. (New) A method of radially expanding and plastically deforming a tubular member, comprising:

positioning the tubular member within a preexisting structure;
radially expanding and plastically deforming a lower portion of the tubular member to form a bell section; and
radially expanding and plastically deforming a portion of the tubular member above the bell section.

607. (New) A method of radially expanding and plastically deforming a tubular member, comprising:

applying internal pressure simultaneously to the inside surface of the tubular member at a plurality of discrete spaced apart locations separated from one another.

608. (New) A system for radially expanding and plastically deforming an expandable tubular member within a borehole having a preexisting wellbore casing, comprising:

means for positioning the tubular member within the borehole in overlapping relation to the wellbore casing;
means for radially expanding and plastically deforming a portion of the tubular member to form a bell section; and
means for radially expanding and plastically deforming a portion of the tubular member above the bell section comprising a portion of the tubular member that overlaps with the wellbore casing;
wherein the inside diameter of the bell section is greater than the inside diameter of the radially expanded and plastically deformed portion of the tubular member above the bell section.

609. (New) A system for forming a mono diameter wellbore casing, comprising:
- means for positioning an adjustable expansion device within a first expandable tubular member;
 - means for supporting the first expandable tubular member and the adjustable expansion device within a borehole;
 - means for lowering the adjustable expansion device out of the first expandable tubular member;
 - means for increasing the outside dimension of the adjustable expansion device;
 - means for displacing the adjustable expansion device upwardly relative to the first expandable tubular member m times to radially expand and plastically deform m portions of the first expandable tubular member within the borehole;
 - means for positioning the adjustable expansion device within a second expandable tubular member;
 - means for supporting the second expandable tubular member and the adjustable expansion device within the borehole in overlapping relation to the first expandable tubular member;
 - means for lowering the adjustable expansion device out of the second expandable tubular member;
 - means for increasing the outside dimension of the adjustable expansion device; and
 - means for displacing the adjustable expansion device upwardly relative to the second expandable tubular member n times to radially expand and plastically deform n portions of the second expandable tubular member within the borehole.
610. (New) A system for radially expanding and plastically deforming an expandable tubular member within a borehole, comprising:
- means for positioning an adjustable expansion device within the expandable tubular member;
 - means for supporting the expandable tubular member and the adjustable expansion device within the borehole;
 - means for lowering the adjustable expansion device out of the expandable tubular member;
 - means for increasing the outside dimension of the adjustable expansion device;

means for displacing the adjustable expansion mandrel upwardly relative to the expandable tubular member n times to radially expand and plastically deform n portions of the expandable tubular member within the borehole; and
means for pressurizing an interior region of the expandable tubular member above the adjustable expansion device during the radial expansion and plastic deformation of the expandable tubular member within the borehole.

611. (New) A system for forming a mono diameter wellbore casing, comprising:
means for positioning an adjustable expansion device within a first expandable tubular member;
means for supporting the first expandable tubular member and the adjustable expansion device within a borehole;
means for lowering the adjustable expansion device out of the first expandable tubular member;
means for increasing the outside dimension of the adjustable expansion device;
means for displacing the adjustable expansion device upwardly relative to the first expandable tubular member m times to radially expand and plastically deform m portions of the first expandable tubular member within the borehole;
means for pressurizing an interior region of the first expandable tubular member above the adjustable expansion device during the radial expansion and plastic deformation of the first expandable tubular member within the borehole;
means for positioning the adjustable expansion mandrel within a second expandable tubular member;
means for supporting the second expandable tubular member and the adjustable expansion mandrel within the borehole in overlapping relation to the first expandable tubular member;
means for lowering the adjustable expansion mandrel out of the second expandable tubular member;
means for increasing the outside dimension of the adjustable expansion mandrel;
means for displacing the adjustable expansion mandrel upwardly relative to the second expandable tubular member n times to radially expand and plastically deform n portions of the second expandable tubular member within the borehole; and

means for pressurizing an interior region of the second expandable tubular member above the adjustable expansion mandrel during the radial expansion and plastic deformation of the second expandable tubular member within the borehole.

612. (New) A system for radially expanding and plastically deforming an expandable tubular member within a borehole, comprising:

means for supporting the expandable tubular member, an hydraulic actuator, and an adjustable expansion device within the borehole;

means for increasing the size of the adjustable expansion device; and

means for displacing the adjustable expansion device upwardly relative to the expandable tubular member using the hydraulic actuator to radially expand and plastically deform a portion of the expandable tubular member.

613. (New) A system of radially expanding and plastically deforming a tubular member, comprising:

a support member; and

means for applying internal pressure to the inside surface of the tubular member at a plurality of discrete location separated from one another coupled to the support member.

614. (New) A method of cutting a tubular member, comprising:

positioning a plurality of cutting elements within the tubular member; and

bringing the cutting elements into engagement with the tubular member.

615. (New) The method of claim 469, wherein the cutting elements comprise:

a first group of cutting elements; and

a second group of cutting elements;

wherein the first group of cutting elements are interleaved with the second group of cutting elements.

616. (New) A method of injecting a hardenable fluidic sealing material into an annulus between a tubular member and a preexisting structure, comprising:

positioning the tubular member into the preexisting structure;

sealing off an end of the tubular member;

operating a valve within the end of the tubular member; and
injecting a hardenable fluidic sealing material through the valve into the annulus between
the tubular member and the preexisting structure.

617. (New) An actuator system, comprising:
a support member; and
means for pressurizing a plurality of pressure chambers coupled to the support member.
618. (New) A method of engaging a tubular member, comprising:
positioning a plurality of elements within the tubular member; and
bringing the elements into engagement with the tubular member.
619. (New) A packer module for a packer assembly, comprising:
a support member;
one or more compressible packer sealing elements coupled to the support member;
one or more packer compressing elements movably coupled to the support member for
compressing the compressible packer sealing elements; and
one or more engagement elements movably coupled to the support member for
engaging the interior surface of a tubular member;
wherein each of the packer compressing elements comprise a plurality of
circumferentially spaced apart packer compressing elements; and
wherein each of the engagement elements comprise a plurality of circumferentially
spaced apart packer compressing elements.